

CLAIMS

1. A non-aqueous tasteless, odorless liquid spray composition for administration of a bioactive material to the nasal cavity consisting essentially of:
  - 5 a) a pharmacologically acceptable non aqueous liquid carrier in which said bioactive material is directly insoluble,
  - b) a pharmacologically acceptable water insoluble ester of a water soluble acid soluble in said carrier,
  - c) a pharmacologically acceptable water soluble glycol soluble in said ester,
  - 10 d) a pharmacologically acceptable water soluble bio-active material soluble in said glycol but directly insoluble in said carrier.
2. The composition of claim 1 wherein the carrier is selected from the group consisting of a cyclopentasiloxane, a medium chain diglyceride, a medium chain triglyceride and mixtures of said glycerides.  
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3. The composition of claim 2 wherein the carrier is selected from the group consisting of decamethylcyclopentylsiloxane, a medium chain propylene diglyceride, a medium chain propylene triglyceride and mixtures of said glycerides,  
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4. The composition of claim 1 comprising
  - a) from about 50-about 90 wt.% of the carrier,
  - b) from about 10-about 40 wt% of the water insoluble ester,
  - 25 c) from about 1-about 5 wt.% of the water soluble glycol ,
  - d) from about 0.01-about 2 wt.% of the bio-active material.
5. The composition of claim 1 comprising
  - a) from about 60 about 90 wt.% of the carrier,
  - 30 b) from about 10 about 20 wt% of the water insoluble ester,
  - c) from about 1 to about 3 wt.% of the water soluble glycol,

d) from about 0.01 to about 2 wt.% of the bio-active material.

6. The composition of claim 5 wherein the glycol is a C<sub>3</sub> to C<sub>8</sub> glycol.

5 7. The composition of claim 6 wherein the glycol is selected from the group consisting of polyethylene glycol and polypropylene glycol.

8. The composition of claim 5 wherein the ester is a lactate ester.

10 9. The composition of claim 8 wherein the lactate ester is a C<sub>12</sub> - C<sub>15</sub> alkyl lactate

15 10. The composition of claim 9 wherein the alkyl group is selected from the group consisting of cetyl, lauryl, isostearyl and myristyl and mixtures thereof.

20 11. The composition of claim 5 wherein the bio-active material is selected from the group consisting of decongestants, antihistamines, antitussives, anticholinergics, steroids, antibiotics, analgesics, antispasmodics, bronchodilators, vitamins, hormones, antihypertensives and antimicrobials.

12. The composition of claim 5 wherein the bio-active material is a decongestant.

25 13. The composition of claim 12 wherein the bio-active material is selected from the group consisting of oxymetazoline, xylometazoline, naphazoline, phenylephrine, ephedrine in water soluble form.

30 14. The composition of claim 13 wherein the bio-active material is in the form of a pharmacologically acceptable salt.

15. The composition of claim 14 wherein the salt is a hydrochloride or sulfate.
16. A method of producing a spray composition of claim 1 which consists essentially of the sequential steps of dissolving the bio-active material of (d) in a glycol of (c), dissolving said solution of (d) in (c) in an ester of (b) and dissolving said solution of (d) in (c) in (b) in a carrier of (a).
17. The method of producing a spray composition of claim 2 which comprises the sequential steps of dissolving the bio-active material of (d) in a glycol of (c), dissolving said solution of (d) in (c) in an ester of (b) and dissolving said solution of (d) in (c) in (b) in a carrier (a) as defined in Claim 2.
18. The method of producing a spray composition of claim 5 which consists essentially of the sequential steps of dissolving the bio-active material of (d) in a glycol of (c), dissolving said solution of (d) in (c) in an ester of (b) and dissolving said solution of (d) in (c) in (b) in a carrier of (a) selected from the group consisting of decamethylcyclopentylsiloxane, a medium chain diglyceride, a medium chain triglyceride and mixtures of said glycerides.
19. A method of administering a bio-active material to a subject in need of same which consists essentially of spraying a pharmacologically effective amount of a composition of claim 1 into the nasal cavity of said subject.
20. The method of claim 19, wherein the bio-active material is selected from the group consisting of decongestants, antihistamines, antitussives, anticholinergics, steroids, analgesics, antibiotics, antispasmodics, bronchodilators, vitamins, hormones, antihypertensives and antimicrobials.
21. The method of claim 20, wherein the bio-active material is a decongestant.
22. The method of claim 21, wherein the bio-active material is selected from

the group consisting of oxymetazoline, xylometazoline, naphazoline, phenylephrine, ephedrine in water soluble form.

23. The composition of claim 3 wherein the glyceride moieties are selected from  
5 the group consisting of caprylic and capric acids.
24. The method of claim 18 wherein the glyceride moieties are selected from  
the group consisting of caprylic and capric acids.